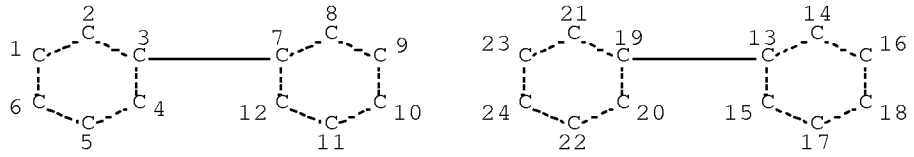
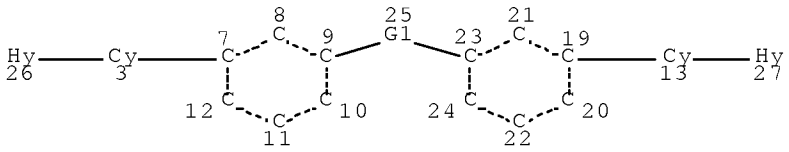
```
=> fil reg
FILE 'REGISTRY' ENTERED AT 09:45:47 ON 21 JAN 2010
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2010 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES:   20 JAN 2010  HIGHEST RN 1202743-12-1
DICTIONARY FILE UPDATES:  20 JAN 2010  HIGHEST RN 1202743-12-1

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH June 26, 2009.

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document.  For information
on property searching in REGISTRY, refer to:

http://www.cas.org/support/stngen/stndoc/properties.html

=> d sta que l8
L1              STR
```



```
   Hy 26          Hy 25


NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS UNLIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS  26

STEREO ATTRIBUTES: NONE
L3        11499 SEA FILE=REGISTRY SSS FUL L1
L6              STR
```



REP G1=(1-5) CY
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS UNLIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 17

STEREO ATTRIBUTES: NONE
L8 118 SEA FILE=REGISTRY SUB=L3 SSS FUL L6

100.0% PROCESSED 11499 ITERATIONS 118 ANSWERS
SEARCH TIME: 00.00.02

=> fil hcaplus
FILE 'HCAPLUS' ENTERED AT 09:45:55 ON 21 JAN 2010
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

FILE COVERS 1907 - 21 Jan 2010 VOL 152 ISS 4
FILE LAST UPDATED: 20 Jan 2010 (20100120/ED)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Oct 2009
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Oct 2009

HCAplus now includes complete International Patent Classification (IPC)
reclassification data for the third quarter of 2009.

CAS Information Use Policies apply and are available at:

http://www.cas.org/legal/infopolicy.html

This file contains CAS Registry Numbers for easy and accurate
substance identification.

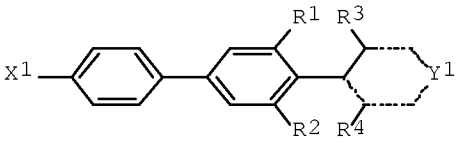
=> d l46 bib abs hitstr tot

L46 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2005:281222 HCAPLUS Full-text
DN 142:363435
TI Organic electroluminescent devices containing specific biphenyl compounds
and LCD therewith
IN Fukuda, Mitsuhiro; Kita, Hiroshi
PA Konica Minolta Holdings, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 50 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005085658	A	20050331	JP 2003-317930	20030910 <--
	JP 4325324	B2	20090902		
	JP 2009117850	A	20090528	JP 2008-313062	20081209 <--
PRAI	JP 2003-317930	A3	20030910 <--		

OS MARPAT 142:363435
GI

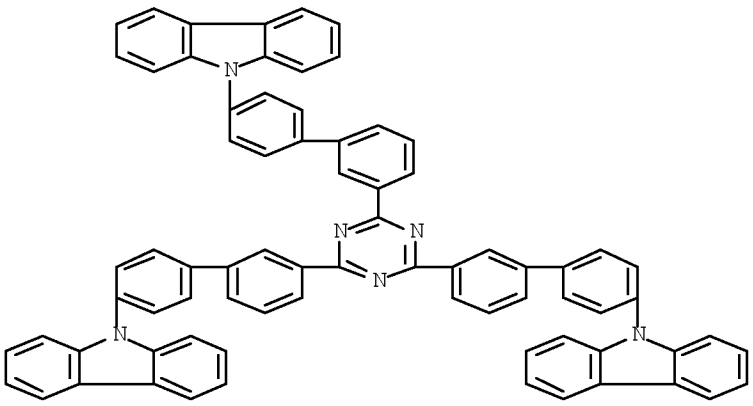


I

AB The devices contain, in one or more of organic compound layers, compds. I [X1 = Q1 or Q2 [Z1, Z2 = C: or C(R7): (R7 = H, substituent); R5, R6 = H, substituent; Ar1, Ar2 = aromatic group]; Y1 = 6-membered aromatic ring substituted with X1; R1-R4 = H, substituent (R1 = R2 = R3 = R4 ≠ H)], X2-p-C6H4-m-C6H4L2X'2 (X2, X'2 = the same as X1; L2 = heterocycle, O-containing bivalent linking group), and/or X3-p-C6H4-C6H4L3CR8R9L'3X'3 [X3, X'3 = the same as X1; L3 = single bond, O, alkylene; R8, R9 = substituent including (fluoro)hydrocarbyl as the one or both; L'3 = single bond or bivalent linking group]. The compds. may work as hole-transporting host of phosphorescent substances in the layers.

IT 848836-90-8
RL: DEV (Device component use); USES (Uses)
(emitting layers; long-life organic LED containing sp. biphenyl compds. and showing high luminescent efficiency for LCD)

RN 848836-90-8 HCAPLUS
CN 9H-Carbazole, 9,9',9''-[1,3,5-triazine-2,4,6-triyltris([1,1'-biphenyl]-3,4'-diyl)]tris- (9CI) (CA INDEX NAME)

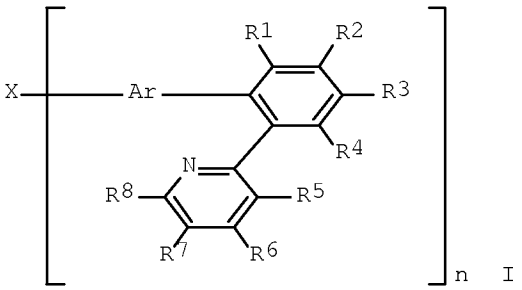


OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L46 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2003:773843 HCAPLUS Full-text
DN 139:298985
TI Organic electroluminescent device and display with phenyl pyridine derivative
IN Kita, Hiroshi; Yamada, Taketoshi; Matsuura, Mitsunobu; Inoue, Yoshio; Oi, Shuichi; Takayama, Shoichi
PA Konica Co., Japan
SO Jpn. Kokai Tokkyo Koho, 26 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

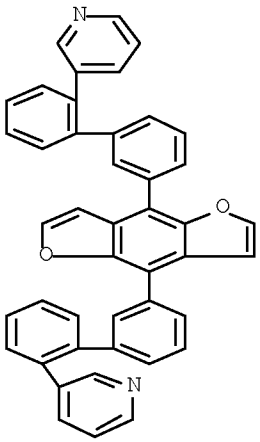
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003282270	A	20031003	JP 2002-82918	20020325 <--
	JP 3925265	B2	20070606		
PRAI	JP 2002-82918		20020325 <--		

OS MARPAT 139:298985
GI



I

AB The invention refers to an organic electroluminescent device comprising at least one Ph pyridine compound I [Z = n-valent bridging group or single bond; Ar = divalent arylene; R1-8 - H or substituent wherein adjacent groups may join to form rings; n = 2 - 6].
IT 608145-82-0
RL: DEV (Device component use); USES (Uses)
(organic electroluminescent device and display with Ph pyridine derivative)
RN 608145-82-0 HCAPLUS
CN Pyridine, 3,3'-[benzo[1,2-b:4,5-b']difuran-4,8-diylbis([1,1'-biphenyl]-3',2-diyl)]bis- (9CI) (CA INDEX NAME)

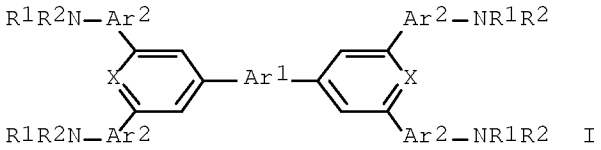


OSC.G 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD (5 CITINGS)

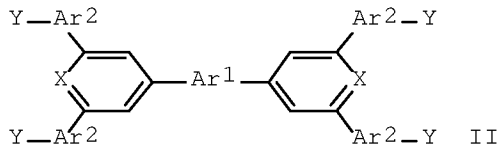
L46 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2000:452490 HCAPLUS Full-text
DN 133:81652
TI Novel nonpolymeric polyamines, their preparations, and their use as hole transportation materials
IN Fujino, Yasumitsu; Ueda, Hideaki; Furukawa, Keiichi
PA Minolta Camera Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 28 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000186066	A	20000704	JP 1998-364801	19981222 <--
JP 4006862	B2	20071114		
PRAI JP 1998-364801		19981222 <--		

OS MARPAT 133:81652
GI



I



II

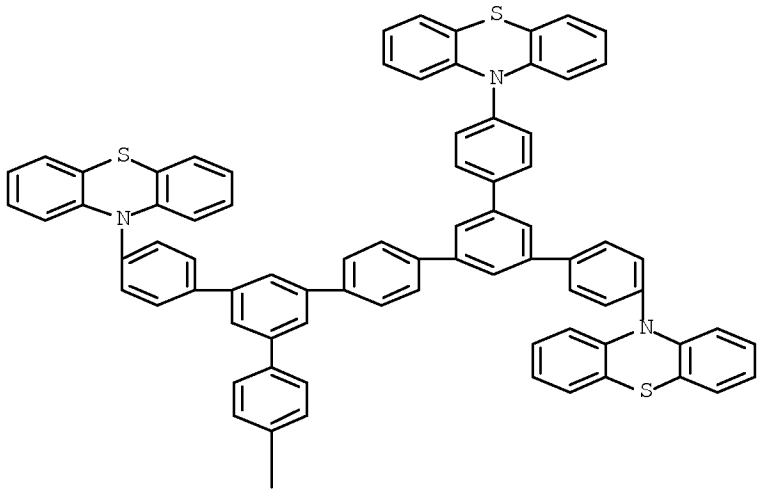
AB Novel amino compds. I [Ar1 = (un)substituted arylene, single bond; Ar2 = (un)substituted arylene; R1-2 = alkyl, aralkyl, (un)substituted aryl,

(un)substituted aromatic heterocycle; R1 and R2 may form ring; X = N, CH, CAr3; Ar3 = (un)substituted aryl] are claimed. Manufacture of I by reaction of II (Y = halogen) and NHR1R2, and other multistep reactions, from compds. given in Markush structures, are also claimed. Use of the I as a hole transportation compound, its use in organic electroluminescent devices and electrophotog. charge transport materials are also claimed. Electrophotog. photoconductors having excellent initial image-forming properties and durable electroluminescent devices are obtained.

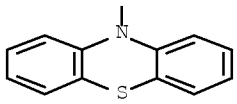
IT 280112-90-5 280112-94-9 280112-96-1
280112-98-3 280113-01-1 280113-03-3
280113-04-4
RL: DEV (Device component use); USES (Uses)
(manufacture of aromatic nonpolymeric polyamines as hole transportation agents in electrophotog. photoconductors and electroluminescent devices)

RN 280112-90-5 HCAPLUS
CN 10H-Phenothiazine, 10,10'-[5',5'''-bis[4-(10H-phenothiazin-10-yl)phenyl][1,1':3',1'':4'',1''':3''',1''''-quinquephenyl]-4,4''''-diyl]bis- (9CI) (CA INDEX NAME)

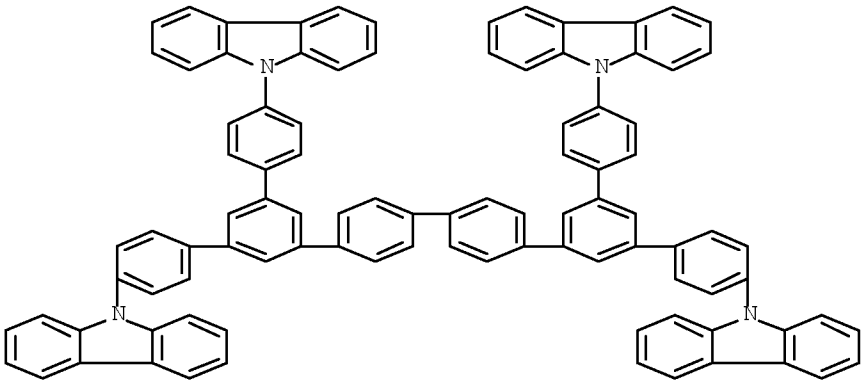
PAGE 1-A



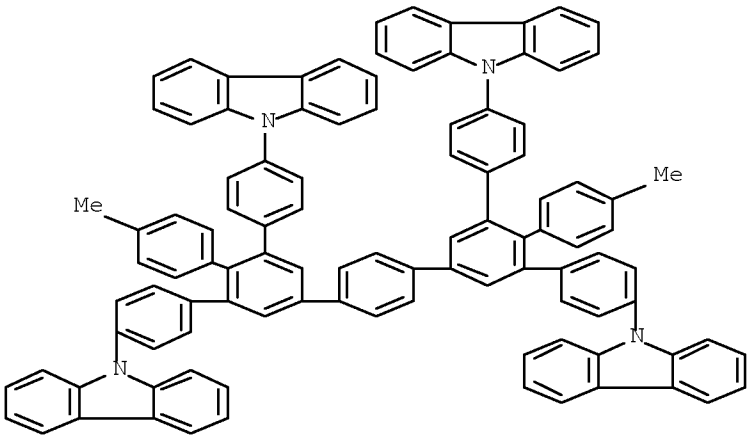
PAGE 2-A



RN 280112-94-9 HCAPLUS
CN 9H-Carbazole, 9,9'-[5',5''''-bis[4-(9H-carbazol-9-yl)phenyl][1,1':3',1'':4'',1''':4''',1''''':3''''',1'''''-sexiphenyl]-4,4'''''-diyl]bis- (9CI) (CA INDEX NAME)

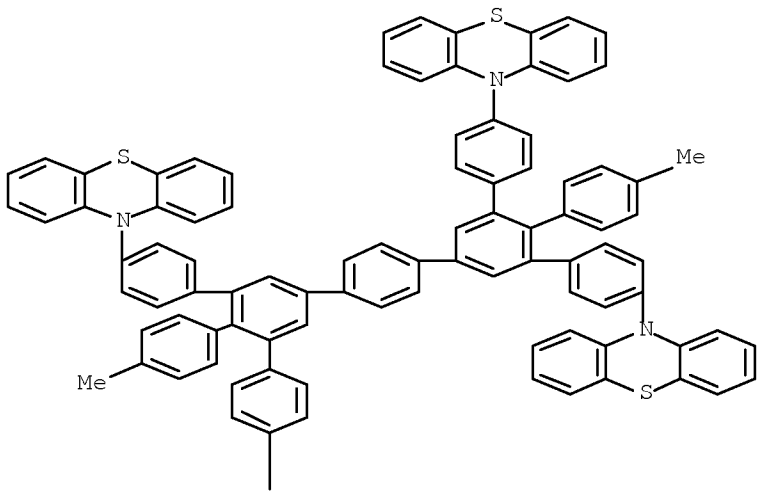


RN 280112-96-1 HCAPLUS
CN 9H-Carbazole, 9,9'-[5',5'''-bis[4-(9H-carbazol-9-yl)phenyl]-4''',6'-bis(4-methylphenyl)[1,1':3',1'':4'',1''':3''',1''''-quinquephenyl]-4,4''''-diyl]bis- (9CI) (CA INDEX NAME)

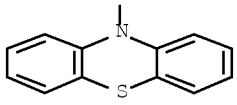


RN 280112-98-3 HCAPLUS
CN 10H-Phenothiazine, 10,10'-[4''',6'-bis(4-methylphenyl)-5',5'''-bis[4-(10H-phenothiazin-10-yl)phenyl][1,1':3',1'':4'',1''':3''',1''''-quinquephenyl]-4,4''''-diyl]bis- (9CI) (CA INDEX NAME)

PAGE 1-A

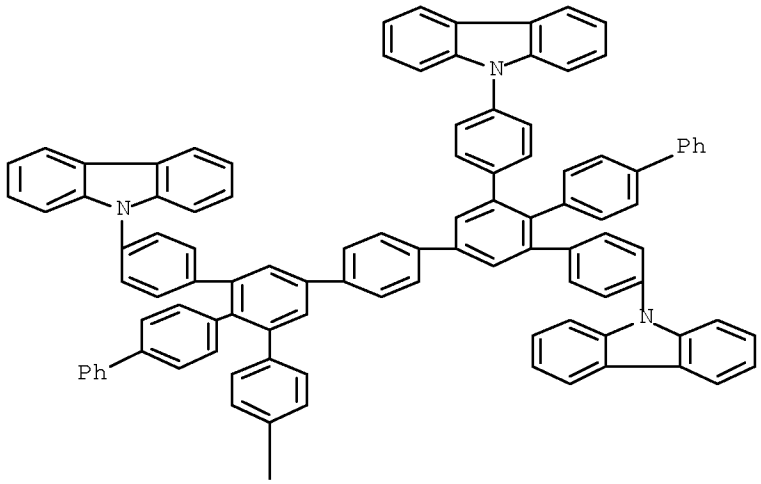


PAGE 2-A

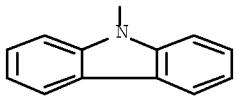


RN 280113-01-1 HCAPLUS
CN 9H-Carbazole, 9,9'-[2'-[1,1'-biphenyl]-4-yl-5'-[3',5'-bis[4-(9H-carbazol-9-yl)phenyl][1,1':4',1'':4'',1'''-quaterphenyl]-4-yl][1,1':3',1''-terphenyl]-4,4''-diyl]bis- (9CI) (CA INDEX NAME)

PAGE 1-A

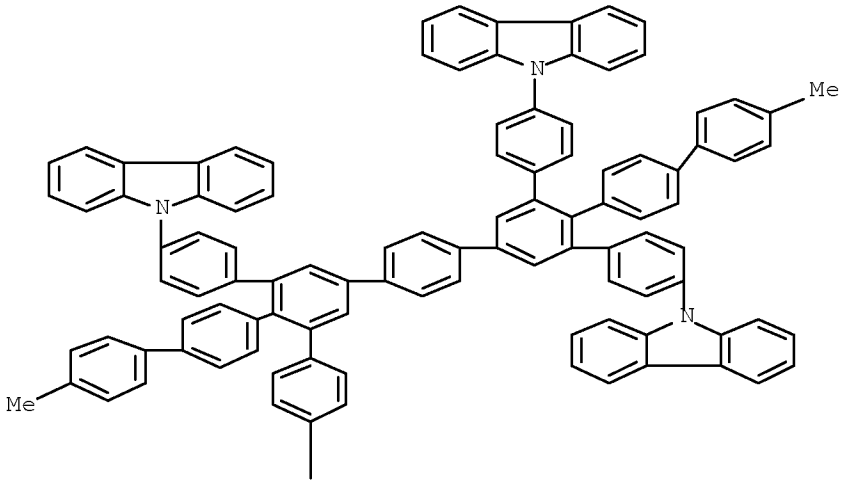


PAGE 2-A

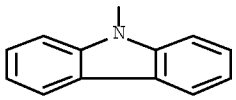


RN 280113-03-3 HCAPLUS
CN 9H-Carbazole, 9,9'-[5',5'''-bis[4-(9H-carbazol-9-yl)phenyl]-4''',6'-bis(4'-methyl[1,1'-biphenyl]-4-yl)[1,1':3',1'':4'',1''':3''',1''''-quinquephenyl]-4,4''''-diyl]bis- (9CI) (CA INDEX NAME)

PAGE 1-A

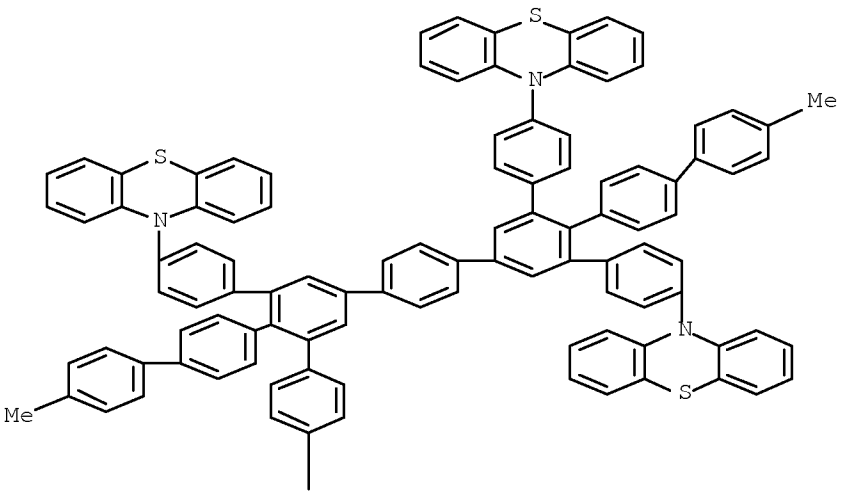


PAGE 2-A

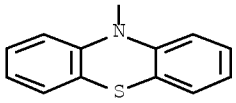


RN 280113-04-4 HCAPLUS
CN 10H-Phenothiazine, 10,10'-[4''',6'-bis(4'-methyl[1,1'-biphenyl]-4-yl)-5',5'''-bis[4-(10H-phenothiazin-10-yl)phenyl][1,1':3',1'':4'',1''':3''',1''''-quinquephenyl]-4,4''''-diyl]bis- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



OSC.G 7 THERE ARE 7 CAPLUS RECORDS THAT CITE THIS RECORD (7 CITINGS)

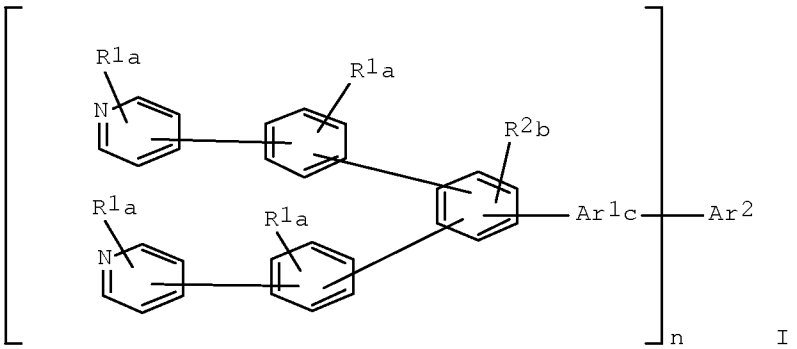
=> d l47 bib abs hitstr tot

L47 ANSWER 1 OF 12 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2009:1475250 HCAPLUS Full-text
DN 152:23121
TI Compounds comprising phenyl and pyridine units and optoelectronic devices using them
IN Liang, Yangang; Liu, Shengxia; Chichak, Kelly Scott; Ye, Qing; Liu, Jie
PA General Electric Company, USA
SO U.S. Pat. Appl. Publ., 54pp.; Chemical Indexing Equivalent to 152:23108 (WO)
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20090289224	A1	20091126	US 2008-125296	20080522
	US 20090289547	A1	20091126	US 2008-258880	20081027
	WO 2009142867	A1	20091126	WO 2009-US41491	20090423

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ,

TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU,
IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI,
SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,
TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
WO 2009142870 A1 20091126 WO 2009-US41525 20090423
W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,
CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES,
FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH,
PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ,
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU,
IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI,
SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,
TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
PRAI US 2008-125296 A2 20080522
US 2008-258880 A 20081027
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
GI

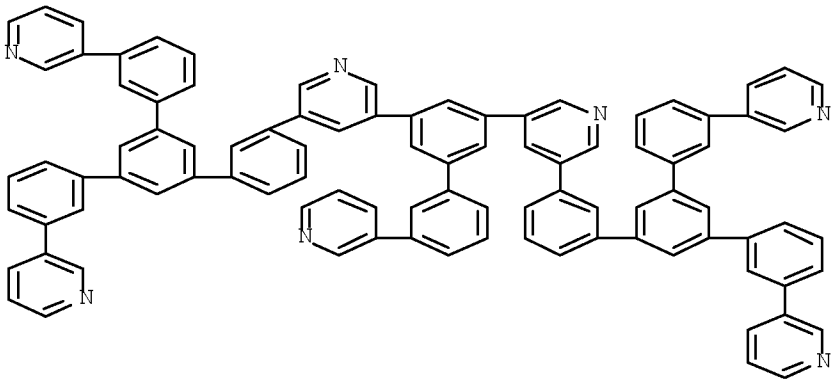


I

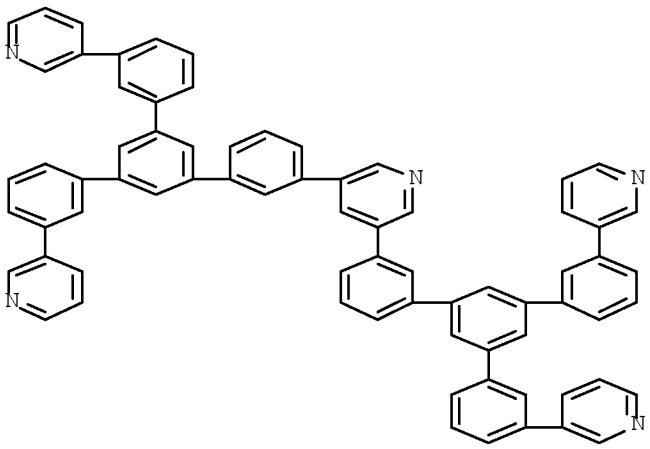
AB The title compds. are described by the general formula I (R1 = independently selected at each occurrence C1-C20 aliphatic radical, C3-C20 aromatic radical, or C3-C20 cycloaliph. radical; R2 = independently selected at each occurrence C1-C20 aliphatic radical, C3-C20 aromatic radical, or C3-C20 cycloaliph. radical;3 a = independently at each occurrence 0-4; b = independently at each occurrence 0-3; Ar1 = direct bond, (hetero)aryl or (cyclo)alkyl; Ar2 = (hetero)aryl or (cyclo)alkyl; c = 0, 1, or 2; and n = 2-4). Optoelectronic devices (e.g., organic light-emitting devices) employing the compds. (e.g., as electron-transporting or hole-transporting materials or as hosts in the emitting layer) are also described.

IT 1197992-99-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(compds. comprising Ph and pyridine units and optoelectronic devices using them)

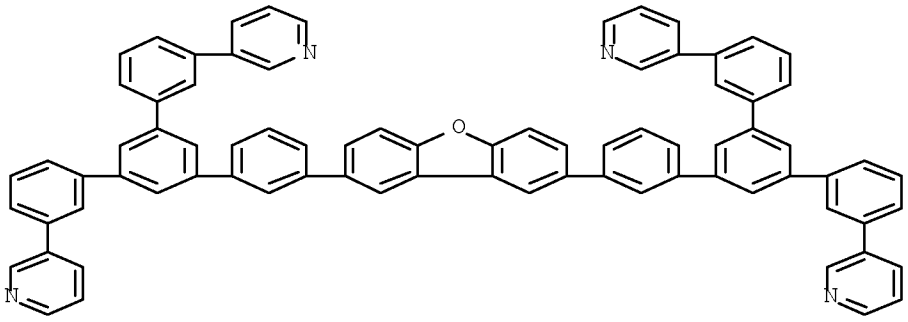
RN 1197992-99-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



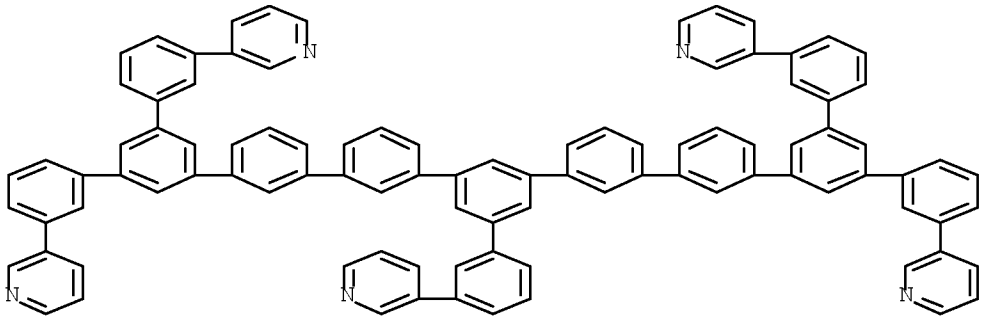
IT 1197989-81-3P 1197989-84-6P 1197989-91-5P
1197989-92-6P 1197989-94-8P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(compds. comprising Ph and pyridine units and optoelectronic devices using them)
RN 1197989-81-3 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



RN 1197989-84-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

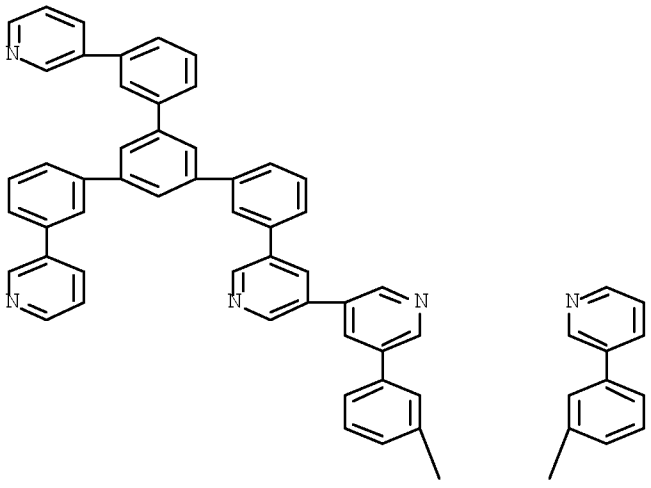


RN 1197989-91-5 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

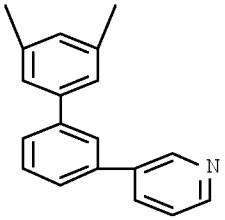


RN 1197989-92-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

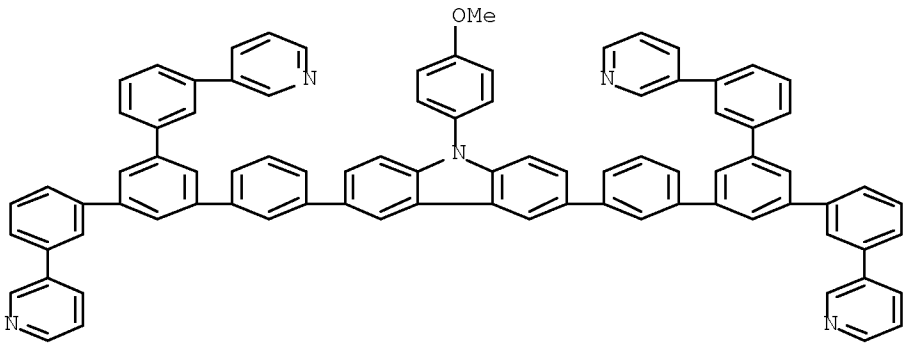
PAGE 1-A



PAGE 2-A



RN 1197989-94-8 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



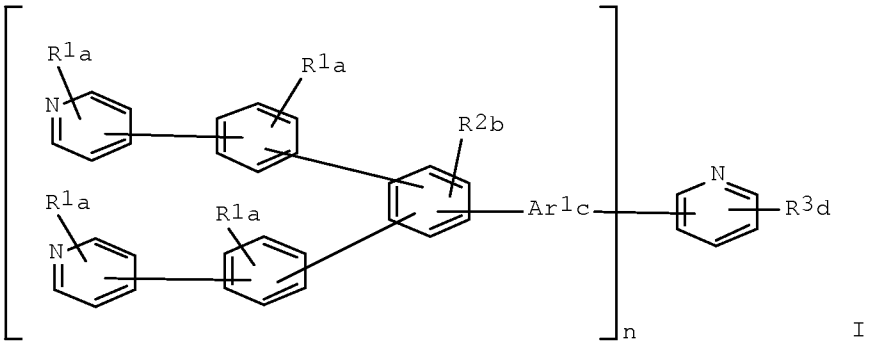
L47 ANSWER 2 OF 12 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2009:1471397 HCAPLUS Full-text
DN 152:23116
TI Compounds comprising phenyl and pyridine units and optoelectronic devices using them
IN Ye, Qing; Liang, Yangang; Liu, Shengxia; Chichak, Kelly Scott; Liu, Jie
PA General Electric Company, USA
SO U.S. Pat. Appl. Publ., 49pp., Cont.-in-part of U.S. Ser. No.125,296.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20090289547	A1	20091126	US 2008-258880	20081027
	US 20090289224	A1	20091126	US 2008-125296	20080522
	WO 2009142870	A1	20091126	WO 2009-US41525	20090423

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,

TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
PRAI US 2008-125296 A2 20080522
US 2008-258880 A 20081027
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
GI

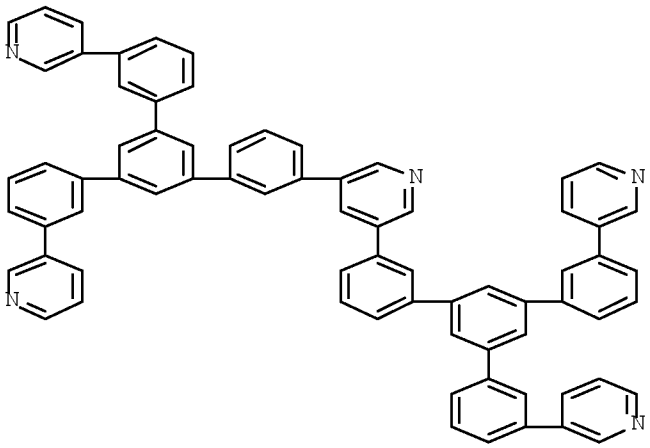


I

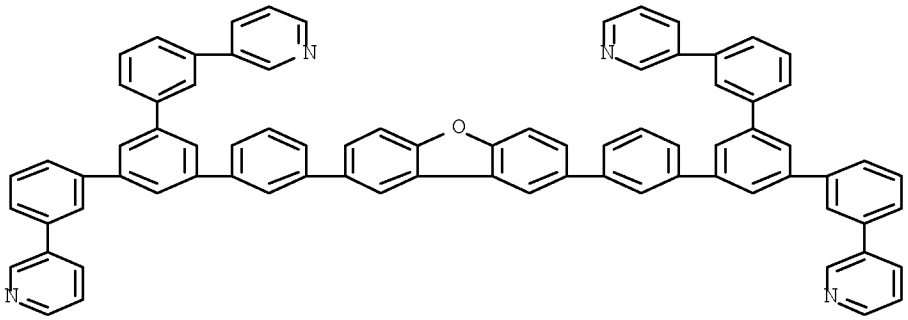
AB The title compds. are described by the general formula I (R1-3 = independently selected at each occurrence C1-C20 aliphatic radical, C3-C20 aromatic radical, or C3-C20 cycloaliph. radical; a = independently at each occurrence 0-4; b = 0-3; Ar1 = direct bond, (hetero)aryl, or (cyclo)alkyl; Ar2 = (hetero)aryl or (cyclo)alkyl; c = 0, 1, or 2; d = 0-4; and n = 2-4). Optoelectronic devices (e.g., organic light-emitting devices) employing the compds. (e.g., as electron-transporting materials or as hosts in the emitting layer) are also described.

IT 1197989-81-3P 1197989-84-6P 1197989-91-5P
1197989-92-6P 1197989-94-8P 1197992-99-6P
1197993-08-0P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(compds. comprising Ph and pyridine units and optoelectronic devices using them)

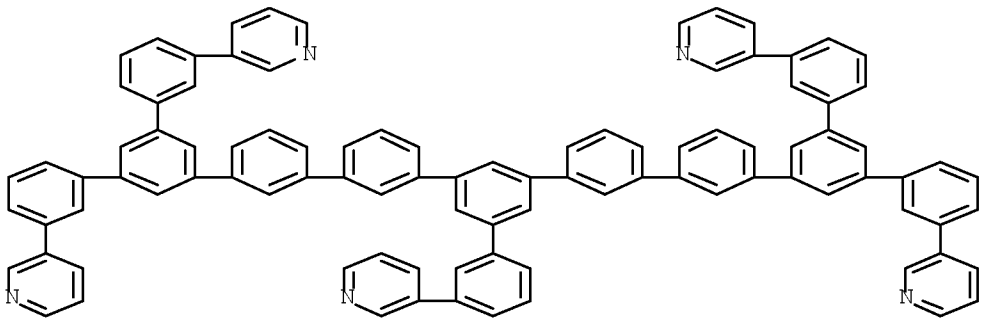
RN 1197989-81-3 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



RN 1197989-84-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

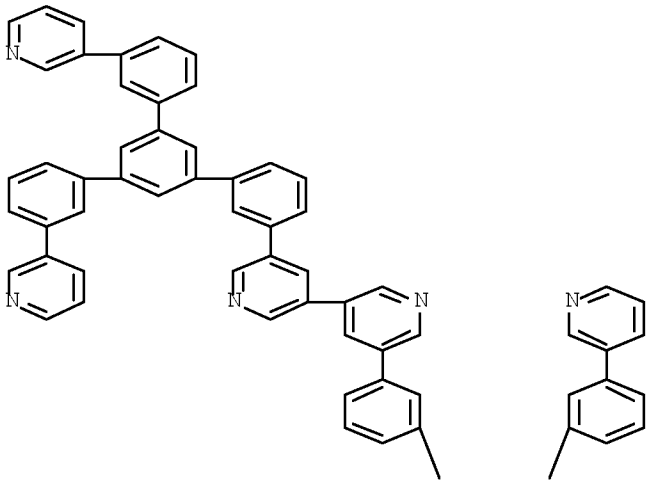


RN 1197989-91-5 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

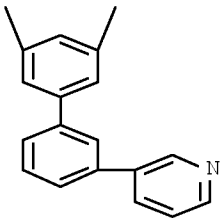


RN 1197989-92-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

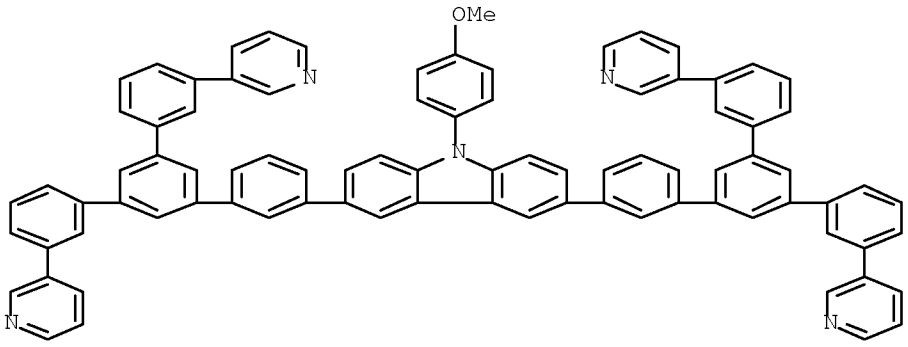
PAGE 1-A



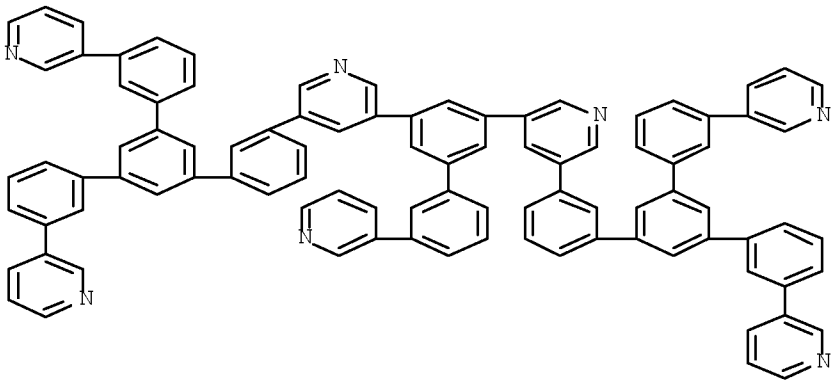
PAGE 2-A



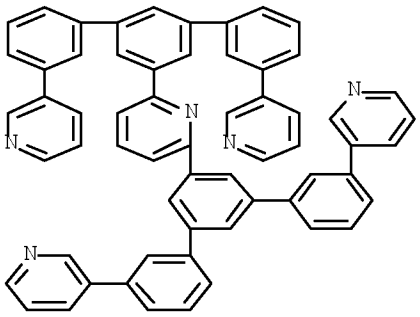
RN 1197989-94-8 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



RN 1197992-99-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



RN 1197993-08-0 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

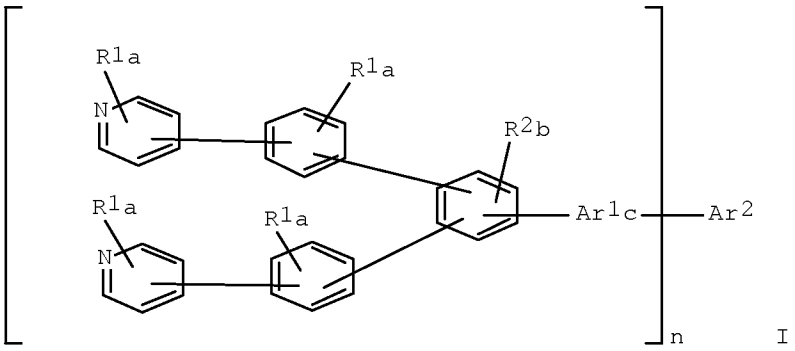


L47 ANSWER 3 OF 12 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2009:1471018 HCAPLUS Full-text
DN 152:23108
TI Compounds comprising phenyl and pyridine units and optoelectronic devices using them
IN Liang, Yangang; Liu, Shengxia; Chichak, Kelly Scott; Ye, Qing; Liu, Jie
PA General Electric Company, USA
SO PCT Int. Appl., 53pp.; Chemical Indexing Equivalent to 152:23121 (US)
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2009142867	A1	20091126	WO 2009-US41491	20090423
	W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI,				

SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,
TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

US 20090289224 A1 20091126 US 2008-125296 20080522
PRAI US 2008-125296 A 20080522
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
GI

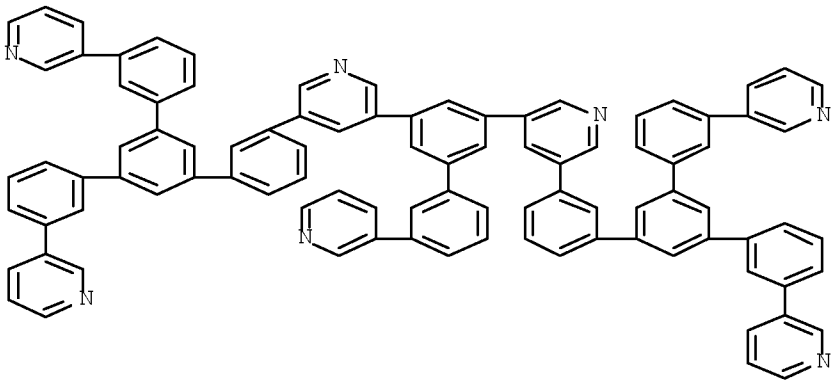


I

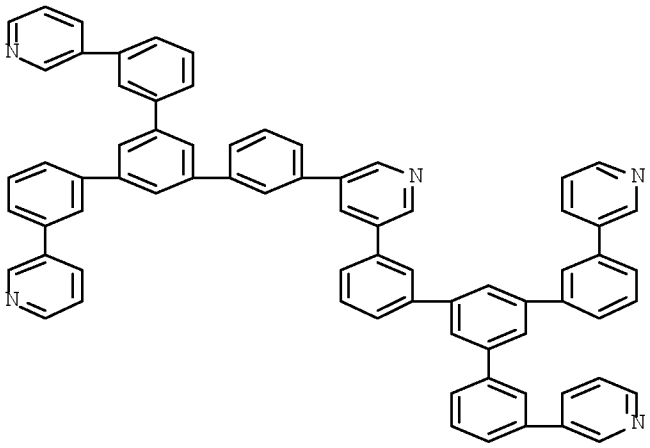
AB The title compds. are described by the general formula I (R1 = independently selected at each occurrence C1-C20 aliphatic radical, C3-C20 aromatic radical, or C3-C20 cycloaliph. radical; R2 = independently selected at each occurrence C1-C20 aliphatic radical, C3-C20 aromatic radical, or C3-C20 cycloaliph. radical; a = independently at each occurrence 0-4; b = independently at each occurrence 0-3; Ar1 = direct bond, (hetero)aryl or (cyclo)alkyl; Ar2 = (hetero)aryl or (cyclo)alkyl; c = 0, 1, or 2; and n = 2-4). Optoelectronic devices (e.g., organic light-emitting devices) employing the compds. (e.g., as electron-transporting or hole-transporting materials or as hosts in the emitting layer) are also described.

IT 1197992-99-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(compds. comprising Ph and pyridine units and optoelectronic devices using them)

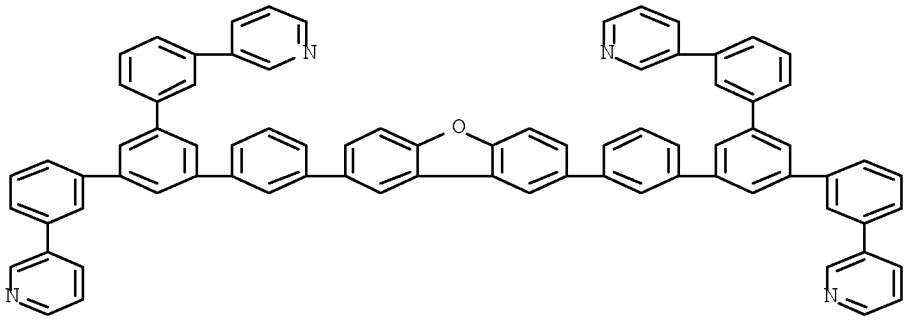
RN 1197992-99-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



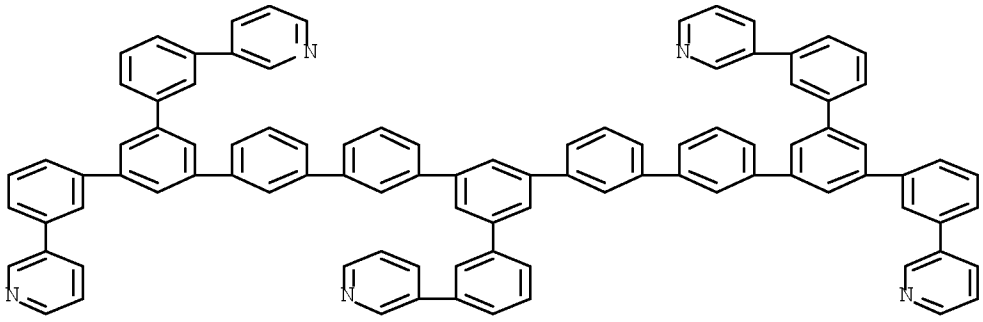
IT 1197989-81-3P 1197989-84-6P 1197989-91-5P
1197989-92-6P 1197989-94-8P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(compds. comprising Ph and pyridine units and optoelectronic devices using them)
RN 1197989-81-3 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



RN 1197989-84-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

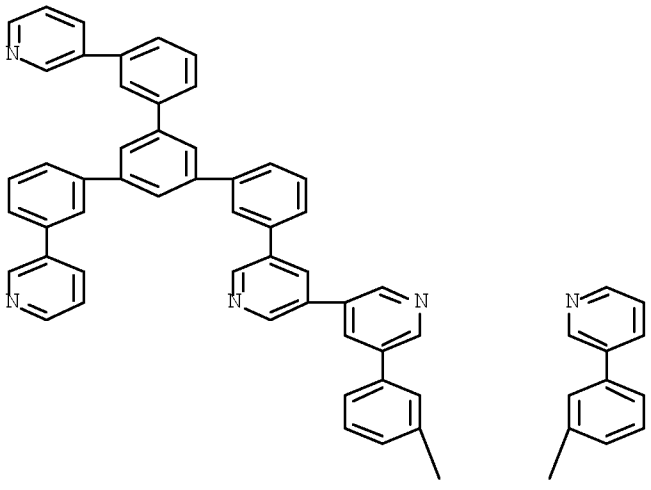


RN 1197989-91-5 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

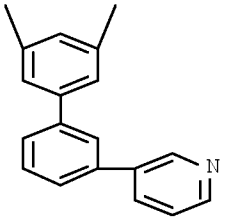


RN 1197989-92-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

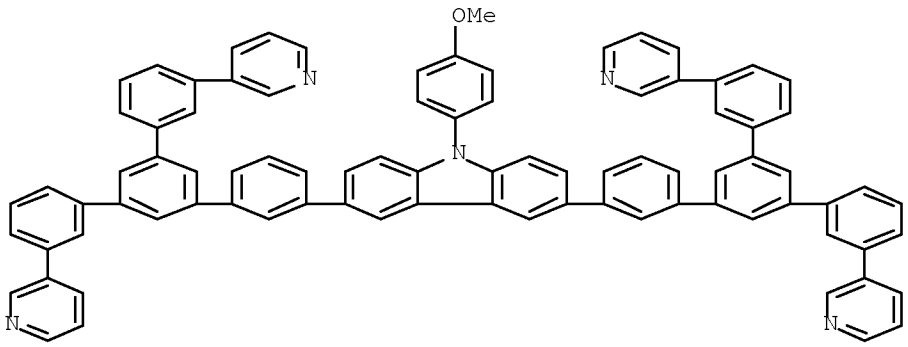
PAGE 1-A



PAGE 2-A



RN 1197989-94-8 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L47 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2009:1471017 HCAPLUS Full-text
DN 152:23107
TI Compounds comprising phenyl and pyridine units and optoelectronic devices using them
IN Ye, Qing; Liang, Yangang; Liu, Shengxia; Chichak, Kelly Scott; Liu, Jie
PA General Electric Company, USA
SO PCT Int. Appl., 54pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2009142870	A1	20091126	WO 2009-US41525	20090423

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

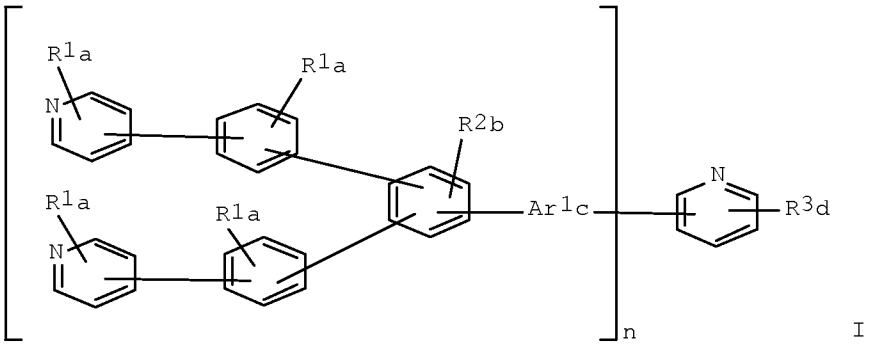
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,

TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

	US 20090289224	A1	20091126	US 2008-125296	20080522
	US 20090289547	A1	20091126	US 2008-258880	20081027
PRAI	US 2008-125296	A	20080522		
	US 2008-258880	A	20081027		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

GI



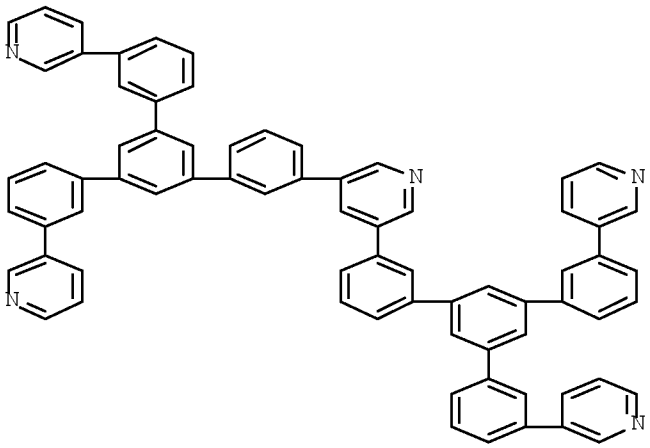
I

AB The title compds. are described by the general formula I (R1-3 = independently selected at each occurrence C1-C20 aliphatic radical, C3-C20 aromatic radical, or C3-C20 cycloaliph. radical; a = independently at each occurrence 0-4; b = 0-3; Ar1 = direct bond, (hetero)aryl, or (cyclo)alkyl; Ar2 = (hetero)aryl or (cyclo)alkyl; c = 0, 1, or 2; d = 0-4; and n = 2-4). Optoelectronic devices (e.g., organic light-emitting devices) employing the compds. (e.g., as electron-transporting materials or as hosts in the emitting layer) are also described.

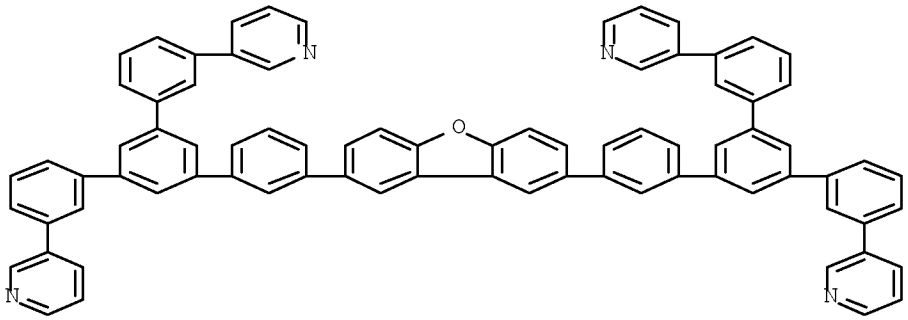
IT 1197989-81-3P 1197989-84-6P 1197989-91-5P
1197989-92-6P 1197989-94-8P 1197992-99-6P
1197993-08-0P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(compds. comprising Ph and pyridine units and optoelectronic devices using them)

RN 1197989-81-3 HCAPLUS

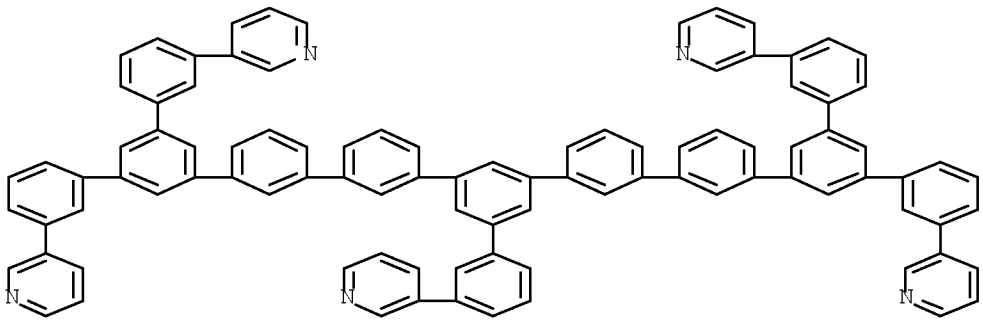
CN INDEX NAME NOT YET ASSIGNED



RN 1197989-84-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

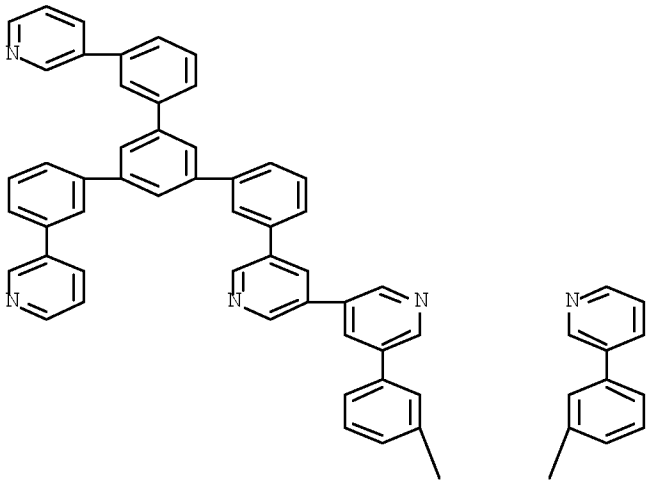


RN 1197989-91-5 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

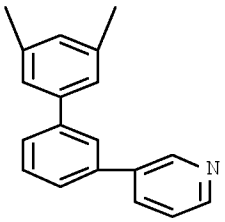


RN 1197989-92-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED

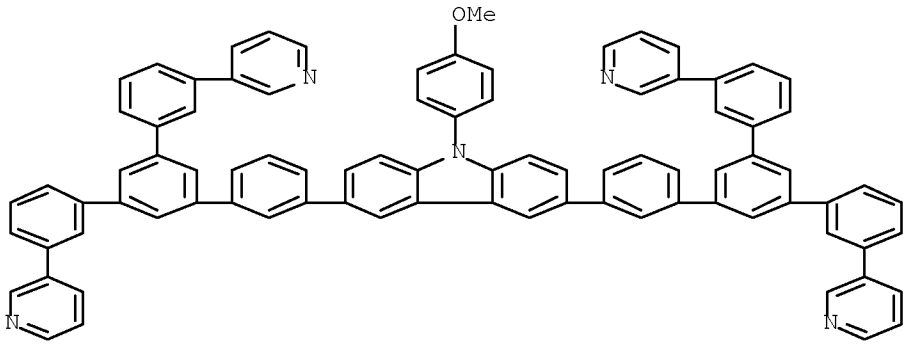
PAGE 1-A



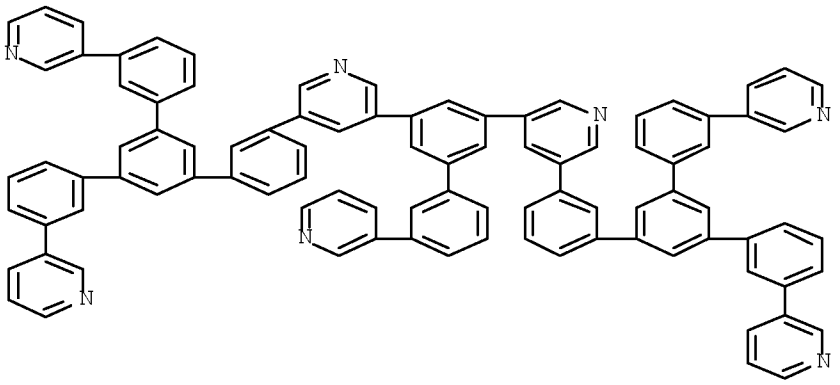
PAGE 2-A



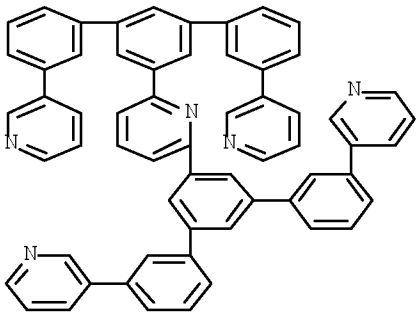
RN 1197989-94-8 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



RN 1197992-99-6 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



RN 1197993-08-0 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L47 ANSWER 5 OF 12 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2008:1399083 HCAPLUS Full-text
DN 149:576723
TI Organometallic compounds having host and dopant functionalities
IN Kwong, Raymond; Xia, Chuanjun; Brooks, Jason
PA Universal Display Corporation, USA
SO PCT Int. Appl., 63pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2008140657	A1	20081120	WO 2008-US3979	20080326

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU,

IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK,
TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,
TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

OS	20080280163	A1	20081113	OS 2007-798115	20070510
EP	2142559	A1	20100113	EP 2008-727168	20080326

R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU,
IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI,
SK, TR

PRAI	US 2007-798115	A	20070510	
	WO 2008-US3979	W	20080326	

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OS MARPAT 149:576723

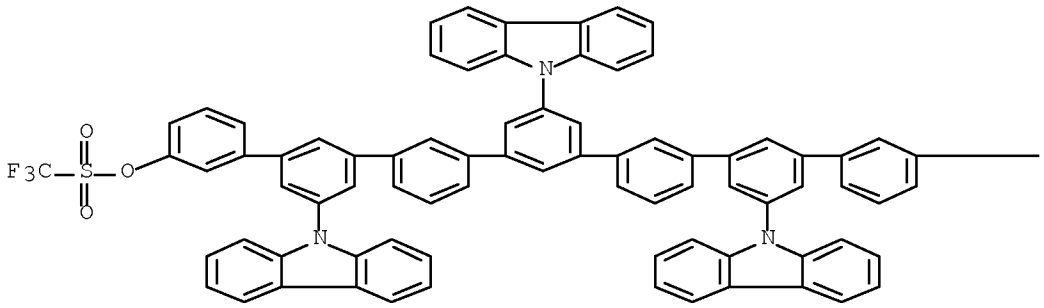
AB Organometallic compds. comprise an emissive core and one or more polyphenylene branches linked to the emissive core. Host moieties are provided as pendant groups on the branches. In some cases, the polyphenylene chain is linked in meta configuration to reduce π-conjugation in the chain. Suitable host moieties for use in the organometallic compound include those that contain carbazole or triphenylene structures. The quantity and types of host moieties on the organometallic compound may be varied to tune the mol. weight ratio of the host moieties relative to the emissive core. In some cases, the organometallic compound is sufficiently soluble in organic solvents to permit solution processing. Also provided are organic electronic devices comprising organometallic compds. of the present invention and methods for making an organic electronic device using organometallic compds. of the present invention.

IT 1079392-58-7P 1079399-28-2P
RL: IMF (Industrial manufacture); PRPH (Prophetic); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(manufacture of organometallic compds. having host and dopant functionalities)

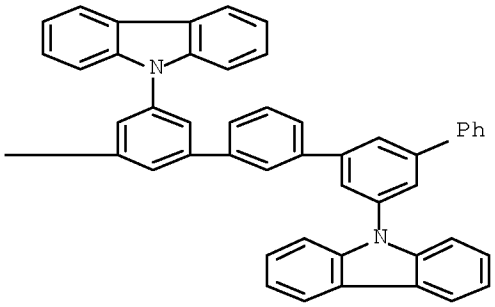
RN 1079392-58-7 HCAPLUS

CN INDEX NAME NOT YET ASSIGNED

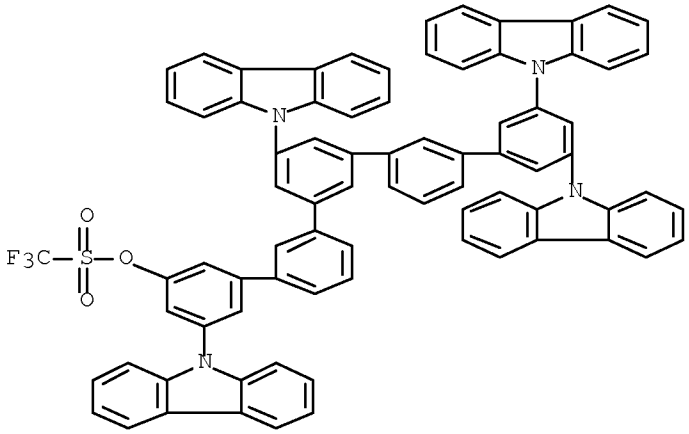
PAGE 1-A



PAGE 1-B



RN 1079399-28-2 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L47 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2008:1367865 HCAPLUS Full-text
DN 149:556794
TI Organometallic compounds having host and dopant functionalities for use in optoelectronic devices
IN Kwong, Raymond; Xia, Chuanjun; Brooks, Jason
PA USA
SO U.S. Pat. Appl. Publ., 38pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 20080280163	A1	20081113	US 2007-798115	20070510
	WO 2008140657	A1	20081120	WO 2008-US3979	20080326

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD,

ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH,
PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU,
IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK,
TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,
TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

EP 2142559 A1 20100113 EP 2008-727168 20080326
R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU,
IE, IS, IT, LI, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI,
SK, TR

PRAI US 2007-798115 A 20070510
WO 2008-US3979 W 20080326

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

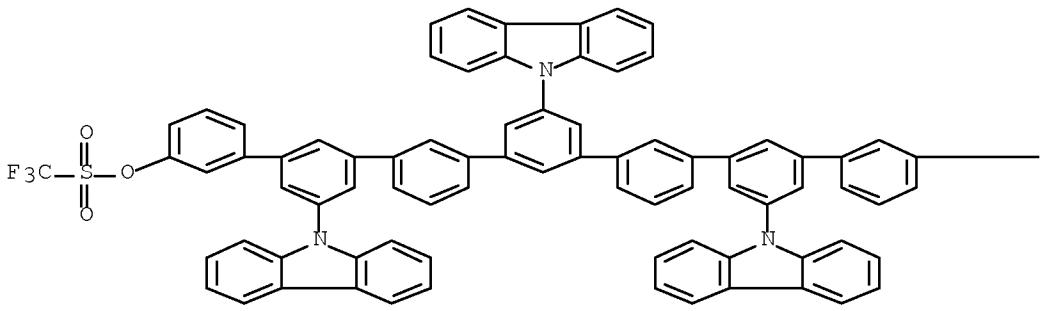
AB Organometallic compds. comprise an emissive core and one or more polyphenylene branches linked to the emissive core. Host moieties are provided as pendant groups on the branches. In some cases, the polyphenylene chain is linked in meta configuration to reduce π-conjugation in the chain. Suitable host moieties for use in the organometallic compound include those that contain carbazole or triphenylene structures. The quantity and types of host moieties on the organometallic compound may be varied to tune the mol. weight ratio of the host moieties relative to the emissive core. In some cases, the organometallic compound is sufficiently soluble in organic solvents to permit solution processing. Also provided are organic electronic devices comprising organometallic compds. of the present invention and methods for making an organic electronic device using organometallic compds. of the present invention.

IT 1079392-58-7P 1079399-28-2P
RL: IMF (Industrial manufacture); PRPH (Prophetic); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(manufacture of organometallic compds. having host and dopant functionalities for use in optoelectronic devices)

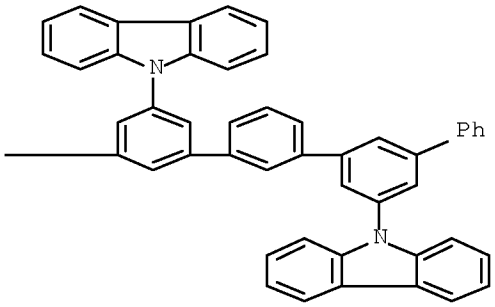
RN 1079392-58-7 HCAPLUS

CN INDEX NAME NOT YET ASSIGNED

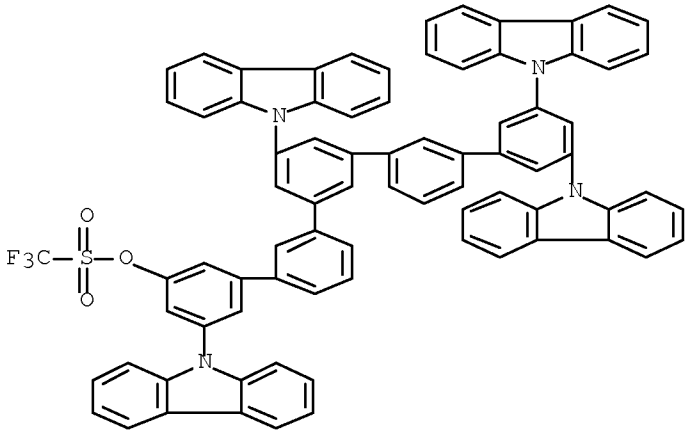
PAGE 1-A



PAGE 1-B



RN 1079399-28-2 HCAPLUS
CN INDEX NAME NOT YET ASSIGNED



L47 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2008:1101244 HCAPLUS Full-text
DN 149:412488
TI Thiazole-based organic light-emitting compound and organic light-emitting element containing the compound
IN Lee, Mi Ae; Kwon, Hyeok Ju; Kim, Bong Ok; Kim, Seong Min; Yoon, Seung Su
PA Gracel Co., Ltd., S. Korea
SO Repub. Korea, 39pp.
CODEN: KRXXFC
DT Patent
LA Korean
FAN.CNT 1

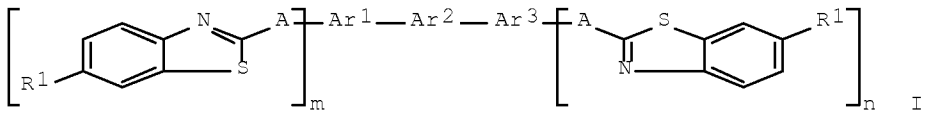
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI KR 857026	B1	20080905	KR 2007-30315	20070328
WO 2008117976	A1	20081002	WO 2008-KR1659	20080325

W: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN,

TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

EP 2129738	A1	20091209	EP 2008-723695	20080325
R: DE, FR, GB, AL, BA, MK, RS				
KR 857027	B1	20080905	KR 2008-71806	20080723
KR 2008088538	A	20081002	KR 2008-71794	20080723
KR 882199	B1	20090210		
PRAI KR 2007-30315	A	20070328		
WO 2008-KR1659	W	20080325		

GI

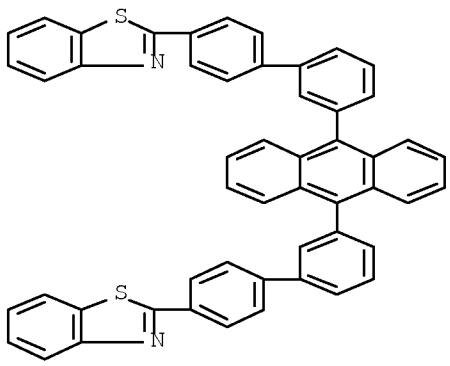


AB The title light-emitting compound is shown in chemical formula I (A = phenylene; Ar1 is hydrogen, Ph, 1-naphthyl, or 2-naphthyl when m is 0; Ar1 is aryl when m is 1 or 2; Ar2 and Ar3 = aryl; n = 1 or 2; R1 = hydrogen, C1-20 alkyl, C1-20 alkyl silyl, C6-20 aryl silyl, or C6-20 aryl). The compound has high luminous efficiency, and can be used for fabricating OLED elements with good drive lifetime.

IT 1062584-96-6P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(thiazole based organic light emitting compound and organic light emitting element containing compound)

RN 1062584-96-6 HCAPLUS

CN Benzothiazole, 2,2'-[9,10-anthracenediylbis([1,1'-biphenyl]-3,4'-diyl)]bis- (CA INDEX NAME)



L47 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2010 ACS on STN

AN 2008:584993 HCAPLUS Full-text

DN 148:549289

TI Organic electroluminescent devices, their films, compositions, and charge-transporting low molecule coating materials therefor

IN Takeuchi, Masako; Yabe, Masayoshi; Okabe, Kazutake; Goromaru, Hideki; Endo, Kyoko; Iida, Koichiro

PA Mitsubishi Chemical Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 61pp.
CODEN: JKXXAF

DT Patent

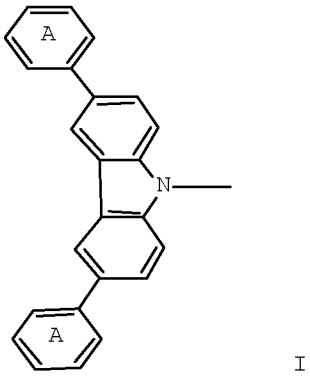
LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2008112984	A	20080515	JP 2007-255807	20070928
PRAI	JP 2006-273482	A	20061004		

OS MARPAT 148:549289

GI



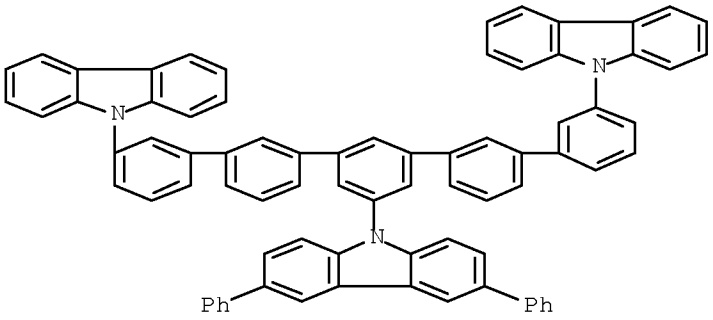
I

AB The title materials, forming noncrystg. charge-transporting layers and giving organic LED with low drive voltage and heat resistance, are lower mols. having partial structure I (ring A may be substituted) and satisfying mol. weight ≤5000. Also claimed are organic compds. R1R2NBB'n-m-C6H2(m'-NR1R2)D'mDNR1R2 (ring B-D, B', D' = benzene ring; R1, R2 = substituent, essentially including I; n, m = 0-3 integer). Compns. of the materials and solvents, and their films formed by wet process, are also claimed.

IT 1025080-49-2P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(charge-transport substances; organic electroluminescent devices containing low-mol. charge-transport layers with good heat resistance and showing low drive voltage)

RN 1025080-49-2 HCAPLUS

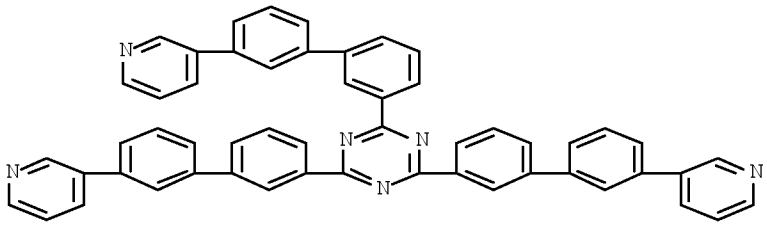
CN 9H-Carbazole, 9-(3,3''''-di-9H-carbazol-9-yl[1,1':3',1'':3'',1''':3''',1''''-quinquephenyl]-5''-yl)-3,6-diphenyl- (CA INDEX NAME)



L47 ANSWER 9 OF 12 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2007:614770 HCAPLUS Full-text
DN 147:42384
TI Novel triazine derivative for blue phosphor and organic electroluminescent element containing the same
IN Kido, Junji; Su, Shih-Chien; Takeda, Takashi
PA Chemipro Kasei Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 130pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2007137829	A	20070607	JP 2005-334956	20051118
PRAI JP 2005-334956		20051118		

OS MARPAT 147:42384
AB The present invention relates to an organic electroluminescent element containing a novel triazine derivative, Markush structures of which are described in the claims.
IT 939430-31-6P
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(Novel triazine derivative for organic electroluminescent element)
RN 939430-31-6 HCAPLUS
CN 1,3,5-Triazine, 2,4,6-tris[3'-(3-pyridinyl)[1,1'-biphenyl]-3-yl]- (CA INDEX NAME)

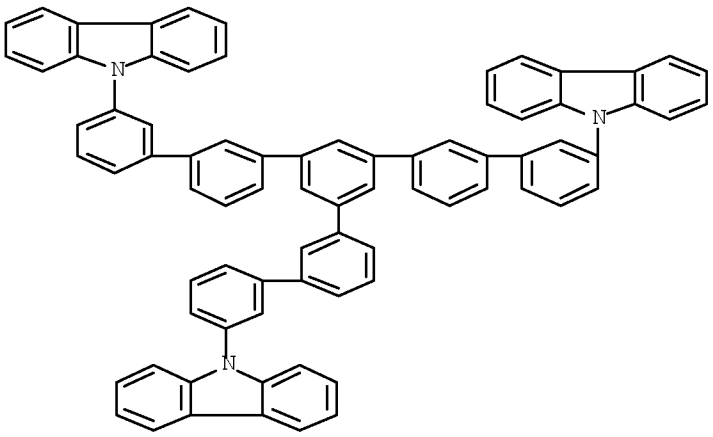


L47 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2007:284828 HCAPLUS Full-text
DN 146:305518

TI Charge transporter materials with excellent solubility, their compositions, and organic electroluminescent devices
IN Iida, Koichiro; Yabe, Masayoshi; Sato, Hideki; Takeuchi, Masako; Fugono, Masayo; Okabe, Kazutake; Goromaru, Hideki; Okabe, Misako
PA Mitsubishi Chemical Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 71pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2007067383	A	20070315	JP 2006-208258	20060731
PRAI	JP 2005-226905	A	20050804		

OS MARPAT 146:305518
AB The materials are depicted as Ar1Ar2NQ1ABCDEQ2NAr3AR4 [A-E] = divalent (un)substituted benzene or pyridine ring; ≥2 of A-E ≠ pyridine ring; Ar1-4 = (un)substituted aromatic hydrocarbyl or heterocyclic group; Q1,2 = direct bond, divalent linking group derived from (un)substituted aromatic hydrocarbon or aromatic heterocyclic ring, thus giving EL devices with high emission efficiency and driving stability.
IT 928050-05-9P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(charge transporter; charge transporters with good solubility for organic EL devices)
RN 928050-05-9 HCAPLUS
CN 9H-Carbazole, 9,9'-[5''-[3'-(9H-carbazol-9-yl)[1,1'-biphenyl]-3-yl][1,1':3',1'':3'',1''':3''',1''''-quinquephenyl]-3,3''''-diyl]bis- (CA INDEX NAME)



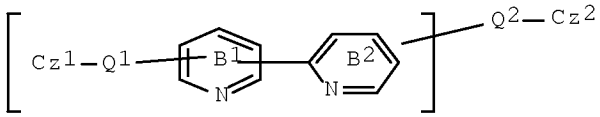
OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L47 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2006:763746 HCAPLUS Full-text
DN 145:210876
TI Preparation of carbazole derivatives as charge transport materials for organic electroluminescent device
IN Iida, Koichiro; Sato, Hideki; Yabe, Masayoshi; Takeuchi, Masako
PA Pioneer Corporation, Japan; Mitsubishi Chemical Corporation

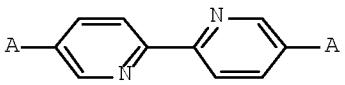
SO PCT Int. Appl., 106pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2006080229	A1	20060803	WO 2006-JP300716	20060119
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
JP 2006232813	A	20060907	JP 2006-11266	20060119
EP 1858094	A1	20071121	EP 2006-711962	20060119
R: DE				
CN 101107244	A	20080116	CN 2006-80002950	20060119
US 20090021146	A1	20090122	US 2007-814570	20070724
KR 2007107007	A	20071106	KR 2007-717180	20070725
PRAI JP 2005-17098	A	20050125		
WO 2006-JP300716	W	20060119		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
OS MARPAT 145:210876
GI

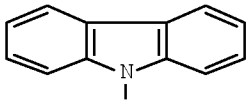


I



II

Q =

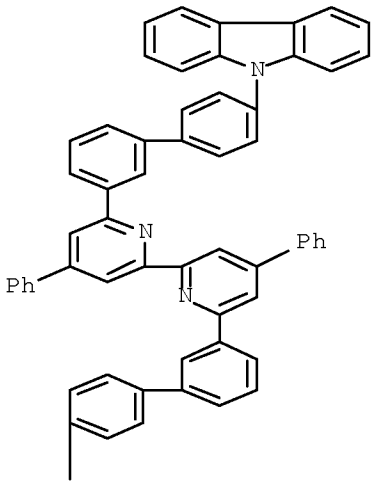


AB The title compds. I [Cz1, Cz2 = carbazolyl moiety; Q1, Q2 = direct bond, connecting group; Cz1, Cz2, Q1, Q2, ring B1 and ring B2 may have substituent(s)] are prepared I have excellent hole transporting capability and electron transporting capability, excellent durability, and high triplet excitation level. Thus, the title compound II [A = Q] was prepared in 2 steps from 2,5-dibromopyridine. The organic electroluminescent device utilizing I exhibits high luminous efficiency and high driving stability.

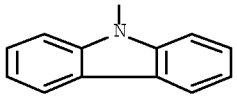
IT 904691-05-0P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of carbazole derivs. as charge transport materials for electroluminescent elements)

RN 904691-05-0 HCAPLUS
CN 9H-Carbazole, 9,9'-[(4,4'-diphenyl[2,2'-bipyridine]-6,6'-diyl)bis([1,1'-biphenyl]-3,4'-diyl)]bis- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



OSC.G 2 THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (10 CITINGS)
RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

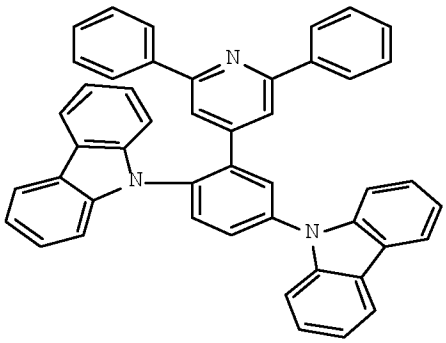
L47 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2010 ACS on STN
AN 2006:632732 HCAPLUS Full-text
DN 145:103546
TI Preparation of biscarbazole derivatives as charge-transporting materials, and organic electroluminescent elements
IN Yabe, Masayoshi; Sato, Hideki
PA Pioneer Corporation, Japan; Mitsubishi Chemical Corporation
SO PCT Int. Appl., 137 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2006067976	A1	20060629	WO 2005-JP22635	20051209
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG,				

SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

JP 2006199679	A	20060803	JP 2005-355790	20051209
EP 1829871	A1	20070905	EP 2005-814748	20051209
R: DE				
CN 101087776	A	20071212	CN 2005-80044718	20051209
KR 2007090952	A	20070906	KR 2007-714364	20070622
US 20080145699	A1	20080619	US 2007-722760	20070625
US 20090191426	A2	20090730		
PRAI JP 2004-373981	A	20041224		
WO 2005-JP22635	W	20051209		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
OS CASREACT 145:103546; MARPAT 145:103546
GI



III

AB Organic compds. represented by the following formula [I; Cz1, Cz2 = carbazolyl; Z = a direct bond or any connecting group which enables the nitrogen atom of the carbazole ring in Cz1 to be conjugated with the nitrogen atom of the carbazole ring in Cz2; Q = a direct bond connected to G in the following formula Q1; ring B1 = a 6-membered aromatic heterocycle having n nitrogen atom(s) as a heteroatom, provided that n is an integer of 1-3; G is connected to Q, it is a direct bond or any connecting group which each is connected to Q; G is bonded to any of the carbon atoms located in the ortho and para positions to a nitrogen atom of the ring B1; when G is not connected to Q, it is an aromatic hydrocarbon group; m = an integer of 3-5] are prepared These compds. combines excellent hole-transporting properties with excellent electron-transporting properties and has excellent long-term resistance to elec. oxidation/reduction and a high triplet excitation level. A charge-transporting material and an organic electroluminescent element which comprise or employ the organic compound I are also disclosed. Thus, aldol condensation of 2,5-difluorobenzaldehyde with acetophenone in a mixture of concentrated

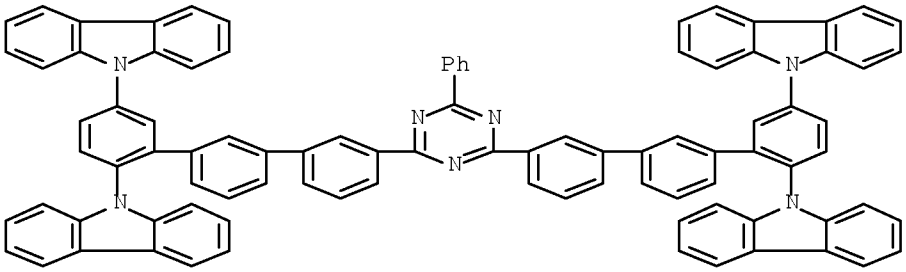
H2SO4 and THF at 35° for 7 h gave 1-phenyl-3-(2,5-difluorophenyl)-2-propen-1-one which underwent cyclocondensation with 1-phenacylpyridinium bromide and ammonium acetate in a mixture of AcOH ad DMF under refluxing for 6 h to give 4-(2,5-difluorophenyl)-2,6-diphenylpyridine (II). Carbazole was treated with NaH in DMF at 80° for 60 min and condensed with II under refluxing for 3 h to give 4-[2,5-bis(carbazol-9-yl)phenyl]-2,6- diphenylpyridine (III). An electroluminescent device with a luminescent layer comprising III as a main component (host material) showed excellent life property (working life of 1.00 at 2.500 cd/m2).

IT 895146-42-6P 895146-60-8P 895146-62-0P
895146-64-2P 895146-83-5P 895146-85-7P
895146-87-9P 895146-89-1P 895147-18-9P
895147-19-0P 895147-20-3P 895147-22-5P

RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of biscarbazole derivs. as charge-transporting materials, and organic electroluminescent elements)

RN 895146-42-6 HCAPLUS

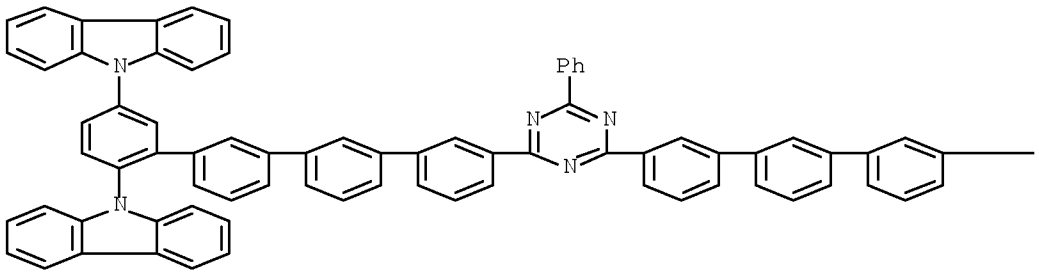
CN 9H-Carbazole, 9,9',9'',9'''-[(6-phenyl-1,3,5-triazine-2,4-diyl)bis([1,1':3',1''-terphenyl]-3'',2,5-triyl)]tetrakis- (9CI) (CA INDEX NAME)



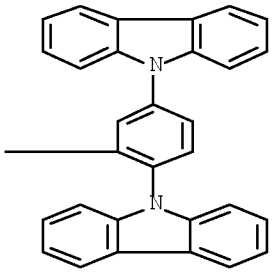
RN 895146-60-8 HCAPLUS

CN 9H-Carbazole, 9,9',9'',9'''-[(6-phenyl-1,3,5-triazine-2,4-diyl)bis([1,1':3',1'':3'',1'''-quaterphenyl]-3''',2,5-triyl)]tetrakis- (9CI) (CA INDEX NAME)

PAGE 1-A

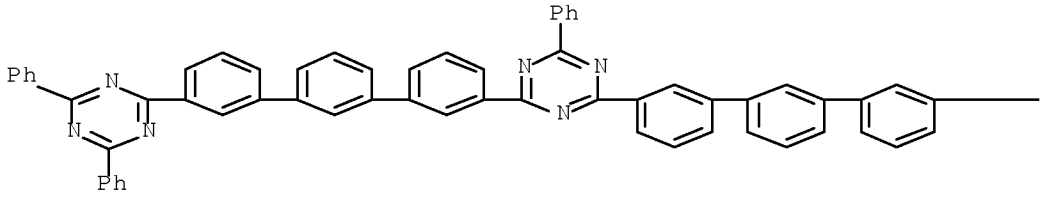


PAGE 1-B

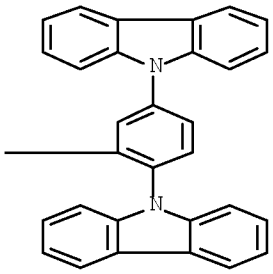


RN 895146-62-0 HCAPLUS
CN 9H-Carbazole, 9,9'-[3'''-[4-[3''-(4,6-diphenyl-1,3,5-triazin-2-yl)[1,1':3',1''-terphenyl]-3-yl]-6-phenyl-1,3,5-triazin-2-yl][1,1':3',1'':3'',1'''-quaterphenyl]-2,5-diyl]bis- (9CI) (CA INDEX NAME)

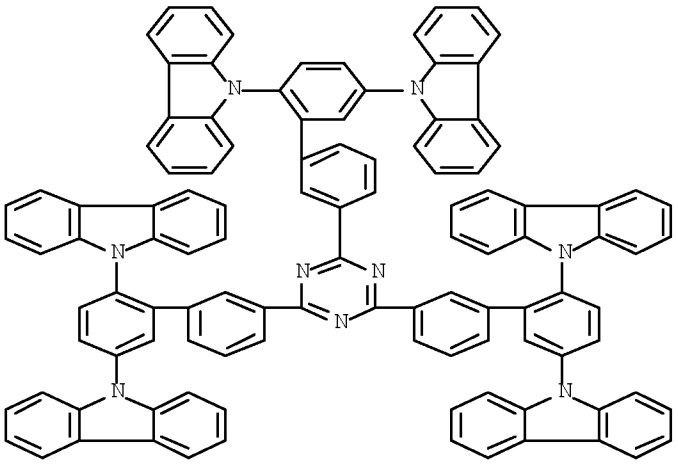
PAGE 1-A



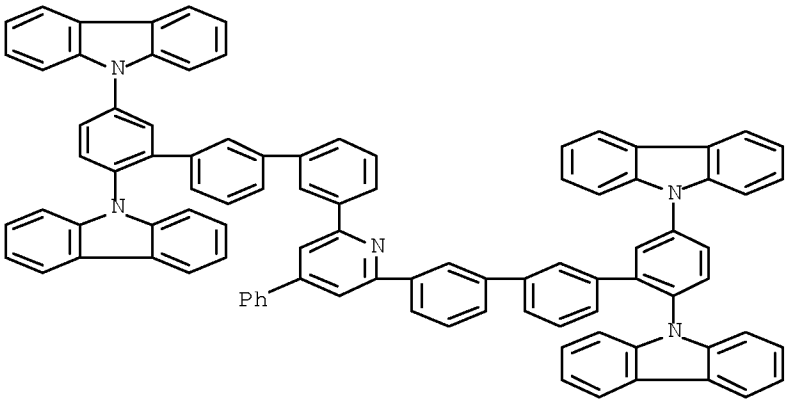
PAGE 1-B



RN 895146-64-2 HCAPLUS
CN 9H-Carbazole, 9,9',9'',9''',9'''',9''''',9''''''-[1,3,5-triazine-2,4,6-triyltris([1,1'-biphenyl]-3',2,5-triyl)]hexakis- (9CI) (CA INDEX NAME)

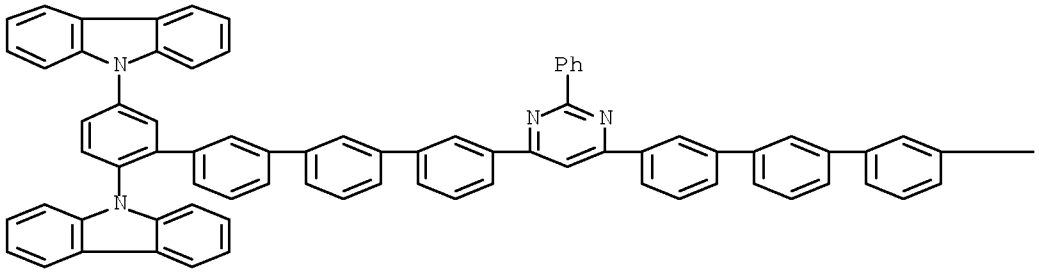


RN 895146-83-5 HCAPLUS
CN 9H-Carbazole, 9,9',9'',9'''-[(4-phenyl-2,6-pyridinediyl)bis([1,1':3',1''-terphenyl]-3'',2,5-triyl)]tetrakis- (CA INDEX NAME)

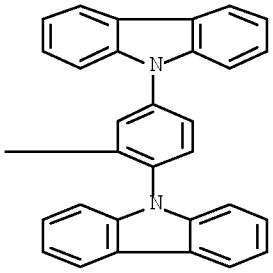


RN 895146-85-7 HCAPLUS
CN 9H-Carbazole, 9,9',9'',9'''-[(2-phenyl-4,6-pyrimidinediyl)bis([1,1':3',1'':3'',1'''-quaterphenyl]-3''',2,5-triyl)]tetrakis- (9CI) (CA INDEX NAME)

PAGE 1-A

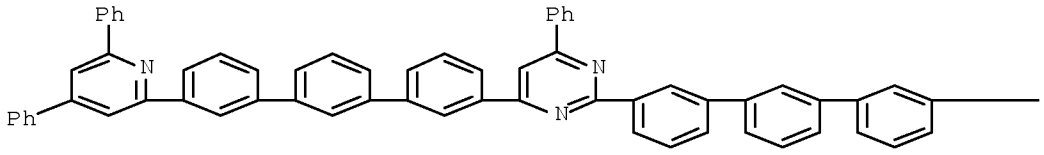


PAGE 1-B

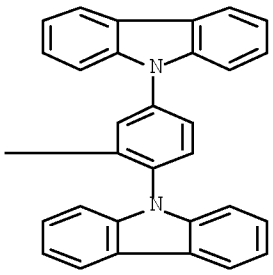


RN 895146-87-9 HCAPLUS
CN 9H-Carbazole, 9,9'-[3'''-[4-[3''-(4,6-diphenyl-2-pyridinyl)[1,1':3',1''-terphenyl]-3-yl]-6-phenyl-2-pyrimidinyl][1,1':3',1'':3'',1'''-quaterphenyl]-2,5-diyl]bis- (9CI) (CA INDEX NAME)

PAGE 1-A

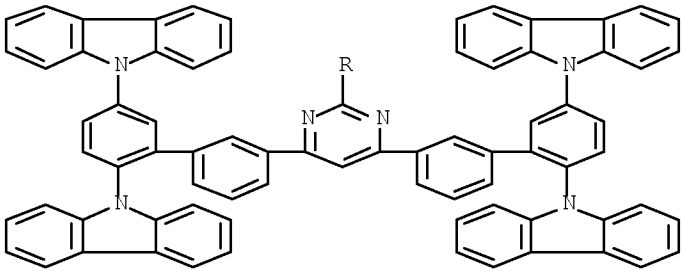


PAGE 1-B

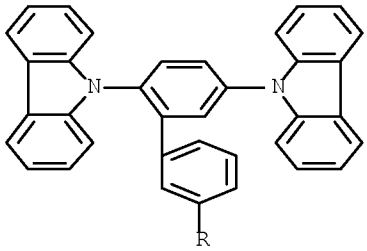


RN 895146-89-1 HCAPLUS
CN 9H-Carbazole, 9,9',9'',9''',9'''',9'''''-[2,4,6-pyrimidinetriyltris([1,1'-biphenyl]-3',2,5-triyl)]hexakis- (9CI) (CA INDEX NAME)

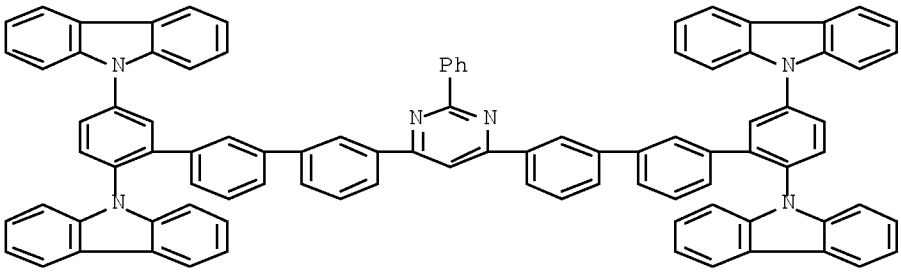
PAGE 1-A



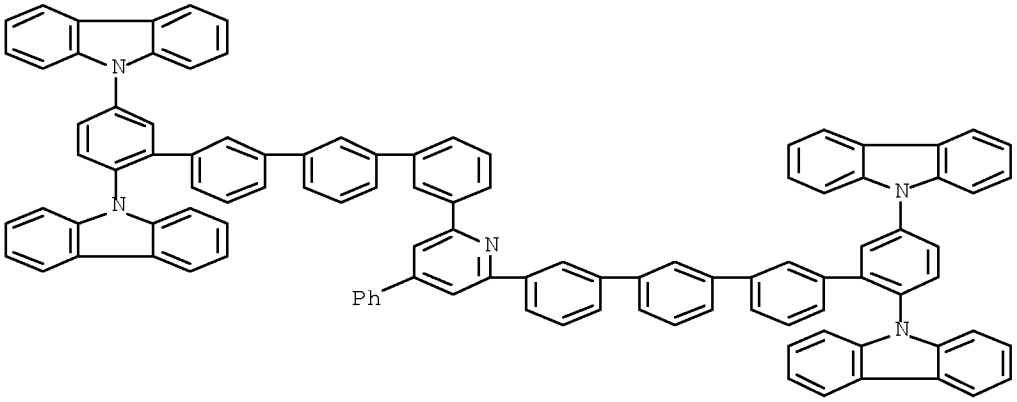
PAGE 2-A



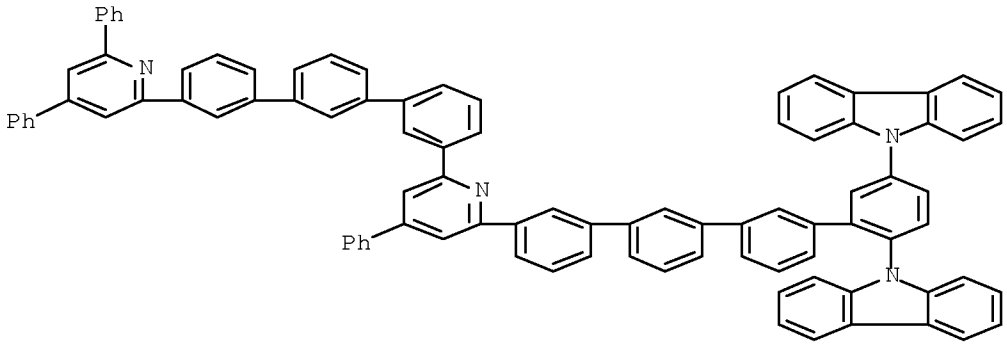
RN 895147-18-9 HCAPLUS
CN 9H-Carbazole, 9,9',9'',9'''-[(2-phenyl-4,6-pyrimidinediyl)bis([1,1':3',1''-terphenyl]-3'',2,5-triyl)]tetrakis- (CA INDEX NAME)



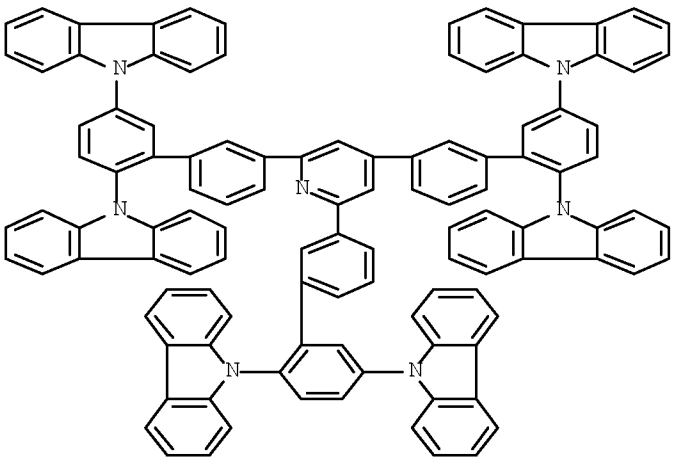
RN 895147-19-0 HCAPLUS
CN 9H-Carbazole, 9,9',9'',9'''-[(4-phenyl-2,6-pyridinediyl)bis([1,1':3',1'':3'',1'''-quaterphenyl]-3''',2,5-triyl)]tetrakis- (9CI) (CA INDEX NAME)



RN 895147-20-3 HCAPLUS
CN 9H-Carbazole, 9,9'-[3'''-[6-[3''-(4,6-diphenyl-2-pyridinyl)[1,1':3',1''-terphenyl]-3-yl]-4-phenyl-2-pyridinyl][1,1':3',1'':3'',1'''-quaterphenyl]-2,5-diyl]bis- (9CI) (CA INDEX NAME)



RN 895147-22-5 HCAPLUS
CN 9H-Carbazole, 9,9',9'',9''',9'''',9''''',9''''''-[2,4,6-pyridinetriyltris([1,1'-biphenyl]-3',2,5-triyl)]hexakis- (9CI) (CA INDEX NAME)



```
OSC.G   2     THERE ARE 2 CAPLUS RECORDS THAT CITE THIS RECORD (6 CITINGS)
RE.CNT  16    THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT


=> d his

     (FILE 'HOME' ENTERED AT 08:54:35 ON 21 JAN 2010)
                SET COST OFF

     FILE 'REGISTRY' ENTERED AT 08:54:47 ON 21 JAN 2010
L1                STR
L2             32 S L1
L3          11499 S L1 FUL
                  SAV TEMP L3 NGUYEN582D/A
L4                STR L1
L5             50 S L4 SAM SUB=L3
L6                STR L4
L7              5 S L6 SAM SUB=L3
L8            118 S L6 FUL SUB=L3
                  SAV TEMP L8 NGUYEN582E/A
L9             26 S L8 AND (PMS OR CCS OR MXS)/CI
L10            92 S L8 NOT L9
                  ACT NGUYEN582C/A
                  ---------
L11 (          42)SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  (108-36-1/BI OR 1153-
L12 (          28)SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L11 AND NC4-C6-C6/ES
L13 (           9)SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L12 AND (C66H43N3 OR
L14               STR
L15               SCR 1842
L16 (      94669)SEA FILE=REGISTRY SSS FUL L14 AND L15
L17               STR
L18 (      88759)SEA FILE=REGISTRY SUB=L16 SSS FUL L17
L19               STR
L20 (       3106)SEA FILE=REGISTRY SUB=L18 SSS FUL L19
L21               STR
L22 (        147)SEA FILE=REGISTRY SUB=L20 SSS FUL L21
L23 (         33)SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L22 AND (CCS OR PMS O
L24 (          3)SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L22 AND NC>=2
L25 (        111)SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L22 NOT (L23 OR L24)
L26 (        102)SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L25 NOT L13
L27 (         18)SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L26 AND (C54H36N2 OR
L28 (         15)SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  L27 NOT (1025080-49-2
L29           24 SEA FILE=REGISTRY SPE=ON  ABB=ON  PLU=ON  (L13 OR L28)
                  ---------
L30           72 S L10 NOT L29
L31            4 S L29 NOT L10
L32            3 S L30 AND M/ELS
L33           69 S L30 NOT L32
L34            1 S L33 AND NC>=2
L35           68 S L33 NOT L34
L36            8 S L35 AND (C90H58N4S4 OR C116H78N4S4 OR C75H48N6 OR C106H68N6 O
L37           10 S L35 AND (C94H62N4 OR C52H32N2S2 OR C114H74N4 OR C44H28N2O2 OR
L38           10 S L35 AND (C104H70N4S4 OR C90H58N8 OR C94H60N6 OR C54H36N6 OR C
L39            9 S L35 AND (C87H59N5O OR C96H62N4 OR C93H59N7 OR C93H61N5 OR C70
L40           35 S L36-L39
L41           33 S L40 NOT (1179354-26-7 OR 1179352-87-4)
L42           33 S L35 NOT L40
```

```
L43           2 S L42 AND (C80H52N4O OR C116H78N4)/MF
L44          35 S L41,L43
                SAV TEMP L44 NGUYEN582F/A

     FILE 'HCAPLUS' ENTERED AT 09:29:38 ON 21 JAN 2010
L45          15 S L44
L46           3 S L45 AND (PY<=2003 OR PRY<=2003 OR AY<=2003)
L47          12 S L45 NOT L46

     FILE 'REGISTRY' ENTERED AT 09:45:47 ON 21 JAN 2010

     FILE 'HCAPLUS' ENTERED AT 09:45:55 ON 21 JAN 2010

=>
```